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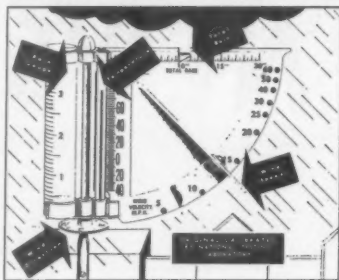
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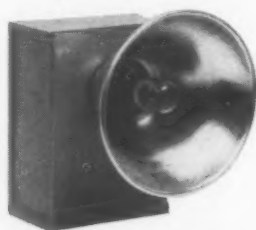
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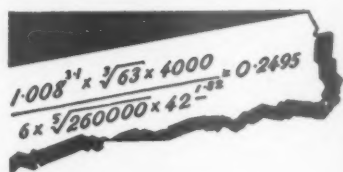


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## GENERAL SCIENCE

# Man's Future Looks Bright

Man has progressed in political and social organizations though no anatomical changes have occurred. That radiation will have undesirable effects is partly fallacious.

THE DEVELOPMENT of interplanetary space vehicles does not show any greater born mental capacity than the ancient invention and use of the wheel and bow and arrow, Dr. Laurence H. Snyder, biologist and president of the University of Hawaii, told the symposium on science and modern civilization in Tokyo.

"There has been little or no anatomical change in man over the last half million years and there is no good evidence that intelligence has changed either," Dr. Snyder said in stressing that man's biological evolution has been, and will continue to be, very slow indeed.

On the other hand, changes in human social and political organization have taken place at unbelievably rapid rates in the past, and, in Dr. Snyder's opinion, will continue to do so in the future.

A tremendous future challenge, in Dr. Snyder's opinion, will be successful efforts by social scientists that will enable mankind to use more constructively the vast latent biological potentialities which exist in all peoples everywhere. This could be accomplished by the newer techniques of social science, reinforced by modern genetic knowledge and augmented by an educated and informed public.

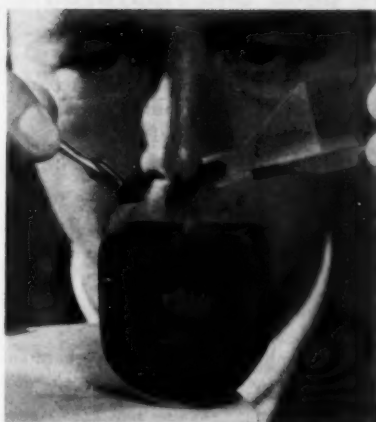
Dr. Snyder said that the argument that there will be harmful effects upon mankind from undesirable genes, created by radiation

and other effects, is fallacious in some aspects. He pointed out that the essential fallacy consists in the application of the epithets "deleterious," "harmful," or "undesirable" to the mutant genes themselves rather than to their effects.

If, through modern medical, social, or economic progress, selection has been relaxed against any gene with harmful effects, he said, this relaxation has been accomplished only because the medical, social or economic agencies have provided environments in which the effects of the genes are rendered less harmful or quite innocuous.

As to those genes that persist in producing detrimental effects in all known environments and despite all attempts at therapy, he said, selection against them remains today as severe and effective as ever. And selection will again begin to operate against any gene for which it has been relaxed if the burden of providing the necessary therapeutic conditions begins to outweigh the social value of providing them. He feels it is reasonable to presume that medical and social advances will continue to be made with ever-increasing efficiency, and that therapeutic or preventive measures which may now seem burdensome will be continuously improved and will become ever more simple, natural, and acceptable.

Science News Letter, April 23, 1960



**HEART OF MASER**—A 12-ounce magnet together with a half-inch square crystal of synthetic ruby and a copper transition section form the "heart" of a ruby maser developed by Hughes Aircraft Company, Culver City, Calif.

Dr. Reichelderfer said that the "major accomplishment" of Tiros in taking pictures of earth's weather patterns confirmed the prediction made in 1954 by Dr. Harry Wexler, the Bureau's director of meteorological research, that such information could be gathered by satellites.

Science News Letter, April 23, 1960

## Weather Analysis Slow

TIROS I continues to demonstrate that a system of half a dozen or so satellites could warn of storms brewing anywhere in the world, officials of the National Aeronautics and Space Administration indicate.

But there is a bottleneck:

About 100 NASA, Weather Bureau and Air Force personnel, some working 15-hour days, are swamped by the more than a thousand pictures already radioed back from Tiros I, the TV cloud-watching satellite.

One NASA official said that putting a useful set of satellites into the air has been proved possible by Tiros. However, a system for quickly analyzing the pictures produced must be built.

The slowness in analyzing pictures from Tiros does not really matter, he said, because Tiros is not a storm warning system but an experiment. Tiros' pictures must be painstakingly correlated with ground data so meteorologists can say that such a cloud pattern means a certain kind of weather on the earth below.

After this correlation, quick weather predictions may be possible. The analysis problem is not a small one.

Although they are working overtime, meteorologists with the Tiros project are pleased. Tiros has produced weather data over oceans where information has been scanty or non-existent.

A special showing of pictures for newsmen revealed the outlines of Spain, Ma-

## METEOROLOGY

# U.S. Will Save Millions

SPOTTING storms from outer space, such as the typhoon photographed from Tiros, will save U.S. industry and Government millions upon millions of dollars yearly.

Advance warning of a severe storm's approach will allow those in its predicted path to take precautionary measures that will save lives and forestall extensive property damage.

The typhoon photographs taken from the experimental weather satellite mark a "major milestone" in weather forecasting, Dr. F. W. Reichelderfer, chief of the U.S. Weather Bureau, told SCIENCE SERVICE.

He said Bureau scientists were "tremendously excited" about the possibilities of spotting undetected storms from space when weather satellites become operational rather than experimental, as Tiros is.

Hurricane forecasts, for instance, instead of warning of the threat of a possible hurricane in the Gulf of Mexico would be definite as to the presence of a tropical storm and its location. Reconnaissance airplanes could be sent directly to the spot,

instead of having to search a wide area to find the storm.

Tornadoes also, when photographed from above, might show some characteristics that could be used to spot them before the twisting funnels were seen from earth-bound stations.

"The detail on photographs from Tiros at the present time is enough that there is hope they will show conditions in tornado situations that can be recognized and used to identify and detect the deadly storms," Dr. Reichelderfer said.

He noted that the success of the equipment in the Tiros satellite, which functioned beyond the expectation of its designers, gave the Weather Bureau a strong case to strengthen and speed up the weather satellite program. One problem, he said, was to make the information gathered by satellites available as soon as possible to weather stations around the country.

Communications satellites to reflect radio waves carrying this information would solve the problem.

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jorca, the St. Lawrence estuary, Italy, Corsica and similar large land masses.

Tiros' TV pictures have 500 scanning lines. In the pictures of areas 800 miles on a side, each line would represent a strip of land about one and one-half miles wide. In the 80-mile-wide pictures, each line represents a strip about a sixth of a mile wide.

The camera can distinguish between white clouds and dark ground and can even distinguish the lighter colors of the shoals around the Bahamas, but not much more.

The camera cannot photograph stars. But NASA may try for a picture of the moon.

Science News Letter, April 23, 1960

## Tiros I Spots Typhoon

### See Front Cover

THE ENORMOUS importance of weather satellites became dramatically apparent when Tiros I spotted its first typhoon.

The storm, found in the South Pacific about 1,000 miles east of Brisbane, Australia, is shown on the cover of this week's SCIENCE NEWS LETTER.

The shots were taken by the wide angle camera, during the 125th orbit of Tiros I at 10 p.m., April 9, 1960, and received by Weather Bureau scientists at the Ft. Monmouth, N. J., receiving station.

Science News Letter, April 23, 1960

#### ROCKETS AND MISSILES

## Navigation Moon Launch Will Help Plot Locations

THE TRANSIT 1-B satellite launched April 13 plus four to six similar satellites to be launched in the next two years will enable Polaris submarines to strike with great accuracy, Navy officials here indicate.

To fire their missiles accurately, the atomic submarines must know their exact position in relation to their targets.

Any nation's navigators may use the Transit system to plot their locations within a mile if they have a slide rule and a radio receiver, but Polaris submarines will have more. They will have secret navigational systems utilizing electronic computers. Air Force planes bearing long-range missiles may use a similar system.

Transit 1-B is a simple 36-inch sphere with two oscillators and transmitters operating on 54, 324, 162 and 216 megacycles. It is broadcasting on four frequencies to determine which is best for future operations. Most economically, Transit probably could be integrated with the Tiros-type weather satellites planned by the National Aeronautics and Space Administration.

Just how simple is Transit? As simple as the whistle of a locomotive. The whistle's pitch seems to drop as the locomotive passes. The Transit's radio beam will also appear to drop as it passes a Polaris submarine.

By measurements of this frequency shift (the Doppler effect) a navigator can figure his position.

With this system, commercial planes and ships may also find their locations. And maps will probably be improved as small islands are pin-pointed. Transit 1-B is expected to remain in orbit for 16 months.

Science News Letter, April 23, 1960

#### AERONAUTICS

## Thrust Indicator Announced for Jets

A NEW KIND of thrust indicator for jet engines has been announced. It provides a pilot with immediate data on the performance of each jet engine.

With present instruments, a pilot must calculate by chart and slide rule to arrive at complete thrust information.

A representative of Astromics, a new division of the Mitchell Camera Corporation in Glendale, Calif., said the new instrument provides "a sharply increased safety factor."

The instrument coordinates engine pressure ratio, temperature and altitude to provide a thrust indication.

Science News Letter, April 23, 1960

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## MEDICINE

# Smog Kills Flu Virus

SOMEBODY has something good to say about smog, for a change.

The good word comes from two scientists who live in Los Angeles, considered by many to be the most smog-smitten city in the U.S.

They found that smog affects influenza viruses in such a way that they are unable to infect. Here is what Drs. Robert D. Boche and James J. Quilligan of the College of Medical Evangelists did:

They exposed black mice to high concentrations of synthetic smog for two months. These mice were then more resistant to influenza virus infection than their corresponding controls if, after virus inoculation, they were again allowed to reside in smog.

This led the researchers to the conclusion that smog destroys the virus in the infected animals. To test this explanation, they bubbled various quantities of smog-like gases through suspensions of viruses. Repeated studies showed that the synthetic smog destroyed the ability of the virus to infect, the scientists reported to the meeting of the Federation of American Societies for Experimental Biology in Chicago.

Another group of mice, located in a spot in the U.S. that is diagonally opposite Los Angeles, have produced evidence that humans may someday be able to supply each other with blood-building tissue as easily as a blood transfusion.

Dr. Elizabeth S. Russell of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine, showed this could be done with anemic mice. She transplanted bone marrow from normal mice to their anemic "cousins." She found that the blood picture of the anemic mice improved immediately and soon became normal.

In addition, skin grafts later transplanted from the normal mice to their formerly anemic cousins were permanently accepted.

Normally, when no bone marrow had been transferred to the anemic mice, the skin grafts would, within 30 to 60 days, be rejected by the mice.

Such skin grafts have remained on the formerly anemic mice for more than 250 days, she reported. However, this success only occurs after blood-forming tissue has been transplanted to these mice.

This suggests that these mice are very much alike except for a slight incompatibility of tissue. She further believes that this might be true in humans. By matching gene-types, it might be possible to induce this type of tolerance in humans. Then someday people would walk around with special patches on their arms to identify their blood-gene types.

Identical types could then donate blood-building tissue for victims of radiation, leukemia and burns. There are probably many more such types than the blood types we know today, she speculated.

Science News Letter, April 23, 1960

## Breathes Automatically

SLAPPING baby's bottom at birth causes him to cry and begin breathing. But for the next few days of life, the child's breathing is automatically controlled and has nothing to do with the drive to supply oxygen and exhale carbon dioxide as in the adult.

This conclusion is based on a study by Drs. E. Adolph and P. A. Hoy of the University of Rochester, Rochester, N. Y. They studied the breathing habits of newborn rats, including response to various degrees of oxygen shortages.

It has long been known that infant animals can live without air for much longer periods than adults. They can also survive in atmospheres containing very small amounts of oxygen. Thus, in a gas

mixture that contained only 20% to 30% of the usual amount of oxygen, newborn rats survived more than one hour.

The researchers said that the infant rats were capable of carrying on bodily processes with very little use of oxygen.

Ordinary breathing at birth is not driven by the shortage of oxygen, and probably not by the excess of carbon dioxide, as is most likely true in adults, the scientists reported at the meeting.

Rather, they suggest that a pattern of breathing is set up within the body that is modified only by extremes of oxygen and carbon dioxide. Therefore, breathing is probably controlled from inside the nervous system during the early days after birth.

Gradually the familiar control by body carbon dioxide and oxygen content becomes more exact and reliable. The controlled system gradually becomes refined into a system more responsive to environmental changes. At about the same time, the infant's ability to live with low amounts of oxygen has been lost, and the adult stage emerges. At this point, the child has come to depend upon a full supply of oxygen.

Science News Letter, April 23, 1960

## Alcohol Damage Curbed

SUBSTANCES that appear to be capable of preventing some of the damage caused by alcoholism were reported.

The substances are ribonucleosides, nucleic acids that occur in all living cells. These acids have been found to be helpful in checking the amount of damage that alcohol produces in a certain strain of bacteria, *Lactobacillus arabinosus*, Drs. E. M. Lansford, Jr., W. Shive and I. D. Hill, of the University of Texas, Austin, reported at the meeting.

They found that alcohol, in sufficient concentrations, can kill some strains of bacteria. A previous study of a different strain of bacteria revealed that growth prevention caused by the alcohol was counteracted by another substance, glutamine, a component of many proteins.

It was later shown that when rats received the glutamine, they chose to drink less of a diluted alcohol than when they did not receive the protein substance. Tests on humans revealed that some alcoholic patients benefited from supplemental amounts of glutamine to the extent that their compulsion for alcohol was reduced.

Now, the Texas scientists are hopeful that the ribonucleosides will produce this same effect in alcoholics.

Science News Letter, April 23, 1960

## Blood Loss From Aspirin

ASPIRIN can cause bleeding in the stomach when taken in relatively heavy doses for a week or more.

It has often been reported that aspirin causes significant internal blood loss through the stomach but reports on the effect of various amounts of the common pain killer have not been in agreement. Drs. Richard M. Watson and Richard N. Pierson Jr. of St. Luke's Hospital, New York, offer additional evidence that Amer-



**SPACE "PIGGY-BACK"**—A rocket-powered hypersonic transport plane that separates from its supersonic booster at 120,000 feet is predicted for the year 1980. The transport, which would carry passengers 6,000 miles in an hour, was proposed by Leson Faneuf of the Bell Aircraft Corp., Buffalo, N.Y.

ica's most popular pill can cause trouble.

They reported at the meeting a study of 90 normal volunteers. Sixty women and 30 men received 600 milligrams of aspirin daily for seven days. This is equivalent to 10 aspirin pills of five-grain strength daily. These subjects got portions of the daily dosage four times each 24-hour period.

The average amount of blood loss per day for this group before they began

taking aspirin was less than one milliliter. However, 70% of these same persons showed a significant increase over this tiny amount while taking the aspirins, Dr. Watson reported. The average blood loss among the group after they began taking the aspirin rose from one to 4.8 milliliters. Ten percent of these persons lost more than 10 milliliters daily.

Science News Letter, April 23, 1960

## CHEMISTRY

# Sugar May Aid Medicine

A SUGAR has been discovered that may add to man's understanding of cancer and diabetes.

Known as a heptose, it was isolated from a rat liver extract and was described to the American Chemical Society meeting in Cleveland, Ohio, by three scientists of Tufts University School of Medicine, Medford, Mass.

Clarification of its function in living tissue could be very useful in combating diseases in which sugar metabolism is abnormal, it was explained.

A lack of vitamin B-1 (thiamine) in test rats' diets interfered with the capacity of rat tissue (brain, heart and lung) to form the sugar, Dr. Hsien-Gieh Sie said. When thiamine was added to the tissue in a test tube, heptose formation did not resume, indicating that the vitamin deficiency had inflicted grave damage.

The heptose may also be found in other mammals, fish, birds, reptiles, plants and bacteria, Dr. Vijai N. Nigam said. He cited this widespread natural occurrence of the heptose as a measure of its biological significance. A heptose is a sugar containing seven carbon atoms arranged in a bead-like sequence.

The heptose was first isolated by heating rat liver enzymes with a phosphate compound of the common sugar glucose. The project was headed by Dr. William H. Fishman, research professor of oncology at Tufts and director of cancer research at the New England Center Hospital, Boston.

Science News Letter, April 23, 1960

## Cheap De-Salted Water

A SIMPLE evaporation system is the basis of a new million-gallon-a-day plant to make drinking water from the sea, soon to be built at Freeport, Texas.

F. C. Standiford Jr. of the W. L. Badger Associates, Inc., Ann Arbor, Mich., told the chemists that fresh water will be produced from the Gulf of Mexico at about one dollar a thousand gallons. He also said that a similar plant of ten times the size could produce fresh water at about 35¢ a thousand gallons, considered to be an economical price.

The Freeport plant will be the first of five large plants to be built for the Office of Saline Water of the Department of the Interior in an attempt to ease the growing

water shortage in parts of the United States.

The process, which has been tested over the last two years in a pilot plant in North Carolina, uses the cheapest evaporators and materials, made possible by special techniques that combat corrosion and the build-up of scale.

Twelve evaporator units are connected in series, so that condensing steam from each will heat the water in the next. Temperatures up to 250 degrees Fahrenheit are used. It has been found that corrosion is largely due to oxygen in the sea water, and this is therefore removed on the way in. To prevent scale formation, more scale is introduced, suspended in the sea water. It is then found that fresh scale deposits on this rather than on the walls of the boilers, where it would gum up the works.

Science News Letter, April 23, 1960

## Strep-Fighter Found

A ONE-STEP chemical synthesis of powerful germ-fighting agents was reported to the meeting by Dr. Edward J. Modest, head of the laboratories for organic chemistry at the Children's Cancer Research Foundation, Inc., Boston.

He said a wide variety of 2,4-diaminopyrimidine compounds have been synthesized in a one-step chemical process. The substances actively inhibit folic acid metabolism in some biological systems, especially in the *streptococcus faecalis*, the germ that often causes human urinary infections.

The meeting also heard Dr. M. Gershenson of Bell Telephone Laboratories, Murray Hill, N. J., report that a rare, transparent gallium phosphide was achieved in experiments aimed at growing extremely pure crystals of this material. The crystals were "rather small" and strain-free, but they transmit light of wavelengths longer than green (toward the red end of the spectrum).

Science News Letter, April 23, 1960

## Completing IGY Data

BETWEEN 90% and 95% of the information collected during the International Geophysical Year is expected to be in by the end of this year, Drs. Hugh Odishaw and Pembroke J. Hart of the U.S. National Committee for the IGY reported at the meeting.

More than 30,000 scientists of 67 nations have been getting information on subjects ranging from space probes to ocean depths since the beginning of the IGY in July, 1957.

This information is now being collected at three centers—one in Washington, D. C., one in Moscow, and one that is a cooperative effort on the part of various scientific societies in Europe and Japan. According to Dr. Hart, the nations seem to have lived up to their international agreements on the exchange of information.

The final results of the IGY research will, he expects, comprise 30 volumes of about 400 pages each, of which the first nine volumes have already been published.

Science News Letter, April 23, 1960

## Rubber Resists Cold

A SYNTHETIC rubber, completely non-flammable, highly resistant to attack by gasoline and corrosives, and still soft and resilient at 60 degrees below zero was reported to the chemists.

Now being tested for use in rubber-coated military uniforms to protect servicemen against the heat of nuclear blasts, the new rubber is also expected to be useful in gaskets, hoses; sealing compounds, and other jobs in which a rubber must perform at low temperatures and in the presence of petroleum products, or chemical corrosives.

The new rubber, a member of a family of plastics and rubbers called "nitrofluorocarbon" rubbers, was reported by Dr. George H. Crawford and D. E. Rice of the Minnesota Mining and Manufacturing Company, St. Paul, Minn., and Dr. Juan C. Monterroso of the U.S. Army Quartermaster Corps.

With the increasingly rigorous conditions under which modern weapons are required to operate, the need is constantly arising for tougher and more versatile materials. Other rubbers of the same general type have proved to be most satisfactory at high temperatures, but tend to become stiff at low temperatures.

Science News Letter, April 23, 1960

## Support U.S. Policy

SCIENTISTS representing the U.S. abroad have a duty to support Government policy, Dr. Wallace R. Brode, science adviser to the Secretary of State, told chemists attending the meeting.

After accepting the Priestley Medal, the ACS's highest award, Dr. Brode said:

"Any individual listed as officially representing the United States, whether he is a scientist or not, has a responsibility to support his Government's policies on all issues which may arise at the forum where he has official status.

"If on peripheral issues, the scientist has personal views in conflict with his Government's policy, it should be incumbent upon him, so long as he accepts official responsibility, to present his Government's position on these peripheral matters and to refrain from any action which would negate that position."

Science News Letter, April 23, 1960

## GENERAL SCIENCE

# Fairs Will Break Records

A THOUSAND students, educators, scientists and press representatives will attend the National Science Fair-International at Indianapolis, May 11-14. Many records will be broken.

Finalists and their escorts from about 200 large regional and area science fairs in this country and abroad will be arriving by plane, train, bus and private car on Tuesday and Wednesday, May 10 and 11. The Fieldhouse at Butler University will reverberate with the sounds of some 370 exhibits being unpacked and set up in time for official judging Wednesday afternoon and evening. More than 150 scientists will form 15 committees to judge the finalists' projects for some 150 awards.

About 60,000 visitors are expected to study and enjoy the exhibits Thursday and Friday. Many schools and communities plan to send bus-loads of students, some of them from considerable distances.

The finalists and the adults accompanying them will choose among 14 specially arranged tours of scientific installations and organizations in the Indianapolis area. Designed to give the student-scientists a

unique opportunity to see science-in-action and to meet and talk with professional scientists, engineers and technologists, the tours have been scheduled for Wednesday, Thursday and Friday at Butler University, Indiana University Medical Center, Eli Lilly and Company, Pitman-Moore Company, Diamond Chain Company, Link Belt Company, P. R. Mallory Company, Western Electric Company, Indiana Bell Telephone Company, Reilly Tar and Chemical Corporation, Naval Avionics Facility, Allison Division of General Motors, Linde Company (Division of Union Carbide), and Rock Island Refining Corporation. For those staying over until Saturday, a trip has been arranged to the Indianapolis Speedway to see the qualifying runs for the annual Memorial Day classic.

Thursday evening, May 12, special Health Awards will be made at a banquet where the awards will be announced by scientists judging for the American Medical Association, the American Dental Association, the American Veterinary Medical Association and the American Pharmaceutical Association.

The Fair will climax on Friday night, May 13, with the announcement of this year's National Science Fair-International awards at a banquet where Dr. Paul A. Siple, Scientific Adviser, Army Research Office, will be the principal speaker. Awards also will be announced by the U.S. Navy, U.S. Army, U.S. Air Force and Air Force Association, American Chemical Society, Society of American Bacteriologists, Indiana Heart Association, and Indiana Pest Control Operators Association.

## Animal Care at the Fair

Special care will be provided for live animals, if any are included in the exhibits of the finalists.

Professional veterinarians, members of the Central Indiana Veterinary Medical Association, have volunteered to care for animals during the periods when finalists are away from their exhibits. The veterinarians also will be available for expert consultation and advice.

## Indianapolis Committee

The Indianapolis Committee responsible for the extensive preparations being made at the host city of the 11th National Science Fair-International is made up of representatives of leading educational, professional and industrial organizations of the area. The Honorable Crawford Parker, Lt. Gov. of Indiana, is honorary chairman of the Committee and Dr. Karl L. Kaufman, Dean of the College of Pharmacy of Butler University, is general chairman.

## News From the Fairs

Reports show that the fairs are breaking all past records. The quality of the science (Continued on p. 271)

## ASTRONOMY

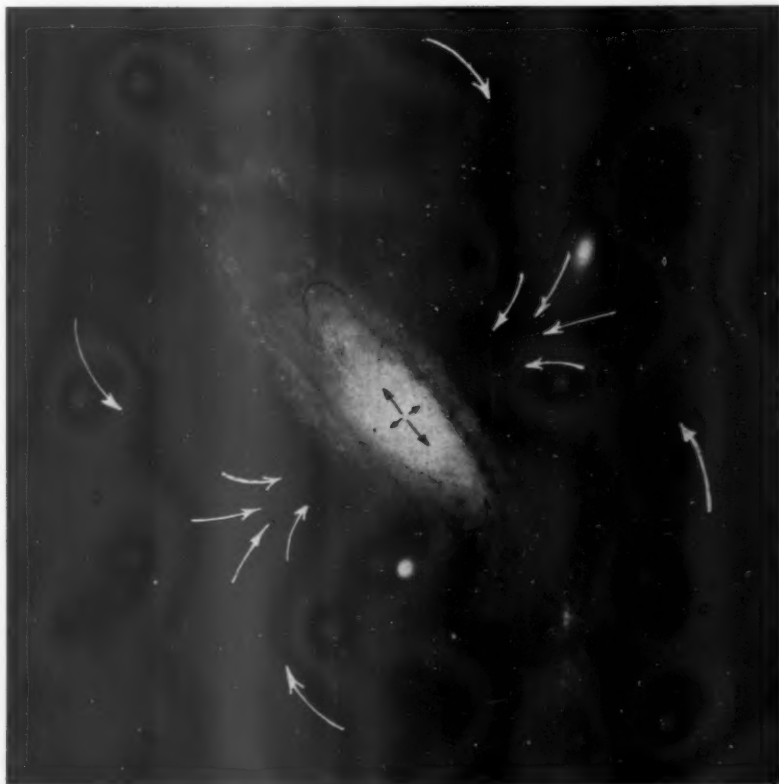
## Andromeda Clouds Move Like Those in Milky Way

THE WAY in which gas clouds move from the center of a spiral galaxy, such as the Milky Way in which our sun is located, is now better understood by astronomers.

Dr. Guido Munch of Mt. Wilson and Palomar Observatories, Pasadena, Calif., reported observing huge clumpy clouds of gas moving outward at about 150,000 miles an hour from the center of the Andromeda galaxy. The Andromeda is a spiral galaxy about 2,000,000 light years away and a "nearby" galactic neighbor. A light year is the distance light travels in a year, about six trillion miles.

The observations were made on photographs taken with the 200-inch telescope at Mt. Palomar. The cloud movements observed in the Andromeda galaxy are similar to those detected near the center of the Milky Way by radio telescopes. Direct observation of the Milky Way center cannot be made from earth because black clouds of gas and inter-stellar dust lie between us and the center and obscure the view.

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**GAS IN THE GALAXY**—Dr. Guido Munch, of Mt. Wilson and Palomar Observatories, observed that hydrogen gas clouds moved outward from the Andromeda galaxy's center as shown by the black arrows. The gas seems to move along the spiral arms, loop out along the lines of magnetic force and turn back toward the center as shown by the white arrows.



## GEOLOGY

**Southern High Plains Due For Change in Climate**

THE SOUTHERN High Plains region of Texas, Oklahoma and Kansas will grow gradually drier over a long period of years and eventually shift to a climate of milder winters, cooler summers and increased precipitation.

This climate prediction was made by Dr. Claude W. Hibbard, professor of geology at the University of Michigan and president of the Michigan Academy of Science, Arts and Letters. He told an Academy meeting in Ann Arbor, Mich., that subtropical conditions existed in part of the plains region during periods between glacial advances.

Such warmer-than-present conditions existed as far north as central Nebraska during the first interglacial period, he said, and again as far north as southwestern Kansas during the second and third interglacial periods.

Dr. Hibbard said subtropical conditions in the West were followed by a semi-arid climate, succeeded in turn by a return to a "more equable subhumid climate" before the next glaciation.

Paleontologists have been able to determine the climatic shifts, he said, by uncovering fossil remains of animals whose presence in an area strongly suggest certain temperature ranges and other environmental conditions.

Science News Letter, April 23, 1960

## PSYCHIATRY

**G.P.s Should Not Practice Psychiatry**

THE FACT that general practitioners are being encouraged to learn and practice psychiatry on their patients has brought a verbal shudder from a psychiatrist.

The pitfalls of such a training program for physicians are many. Past experience has shown that persons who exercise psychotherapy without an extensive background in the subject can do a great deal of harm. Usually, these persons are not aware of the implied assumptions that play a significant role in dynamic therapy, Dr. N. McConaghy of the Royal Melbourne Hospital, Melbourne, Australia, reports in *Lancet*, 1:641, 1960.

For example, it was recently the fashion to believe that a great deal of a person's problems stemmed from his or her early childhood experiences. The idea caught on. Emphasis of the positive role was minimized. Thus, children were encouraged to indulge and parents followed the harmful concept of "permissive" upbringing, he reports.

Now, Dr. McConaghy says, the danger exists that a potentially harmful form of psychiatry will become available to general practitioners. He refers here to the "dynamic psychotherapeutic" methods which emphasize that the patient talk out his problems but receive no advice from the doctor.

The British psychiatrist expresses the fear that general practitioners will be discouraged from using "directive psychotherapy." This type of therapy requires the doctor to suggest steps the patient can take and offer advice. The implication is that the dynamic is more gentle than the directive approach, but Dr. McConaghy maintains that the inexperienced can cause more harm than good with this technique. Therefore, he concludes, it would appear to be better to reserve the dynamic approach for carefully chosen patients, and retain the old patient-doctor relationship for the majority.

Science News Letter, April 23, 1960

## ROCKETS AND MISSILES

**Satellite Radio Device Revealed in Patent Grant**

THE LONG-SECRET device by which data are radioed from satellites and space probes to earth was finally published as it received patent No. 2,931,897, assigned to the U.S. Government through the Secretary of the Navy. The inventors have familiar names: Dr. Merle A. Tuve, an expert in geophysics who directs the Department of Terrestrial Magnetism at the Carnegie Institution of Washington, and Dr. James A. Van Allen of State University of Iowa, discoverer of the natural radiation belts around the earth.

Drs. Tuve and Van Allen developed the device in 1943 while working with the wartime Office of Scientific Research and Development at the Applied Physics Laboratory of Johns Hopkins University.

The device was first used to radio air drag, pressure and flight data on the five-inch, 38-caliber shell used by Navy destroyers, Dr. Tuve reported. It was also used on the 105mm howitzer shell.

Then in 1944 and 1945 it was used on test missiles that later became the Navy's Aerobee and Terrier.

The device converts pressure and other mechanical signals into radio signals that can be received at ground stations. It is housed in a rugged cone. The spinning of the projectile flips out two antennas.

Although an application for a patent was filed in 1943, the granting of the patent, which involves publication, was held up until details of the device were declassified.

Science News Letter, April 23, 1960

## GEOLOGY

**New Observatory Part of Seismological Network**

CONSTRUCTION of a seismological observatory designed to report earthquakes will begin in April at Rensselaer Polytechnic Institute, Troy, N. Y. The observatory will be part of the nation-wide earthquake warning network reporting to the U.S. Coast and Geodetic Survey. The seismographs will be located in bedrock 10 feet underground. Recordings of data on earthquakes, blasts and other natural and artificial ground motions will be used for research on the structure of the earth's interior.

Science News Letter, April 23, 1960

**IN SCIENCE**

## MEDICINE

**Scientists Synthesize Super Sex Hormones**

SEX HORMONES that pack a bigger punch than those brewed by nature have been synthesized by a team of Dutch and Swedish scientists.

By changing atoms on the outside edges, rather than in the center, of a known steroid hormone molecule, the scientists were able to produce substances five to 25 times as active as progesterone, a female sex hormone that prepares the uterus for pregnancy. In clinical trials there were no adverse side effects.

A third artificial substance related to testosterone, a male sex hormone, showed no similar activity, and a fourth substance acted against the steroids that produce maleness.

Details of the research are reported in *Nature*, 186:168, 1960. The researchers were E. H. Reerink, H. F. L. Scholer, P. Westerhof of the Philips-Duphar N. V. Laboratories, Weesp, Holland; A. Querido and A. A. H. Kassenaar of the University of Leyden, Holland; and E. Diczfalussy and K. C. Tillingier of Karolinska Hospital, Stockholm, Sweden.

Science News Letter, April 23, 1960

## MEDICINE

**Aspirin Wrongly Accused British Scientists Say**

REPORTS that aspirin causes bleeding of the stomach and intestine, peptic ulcers and anemia have been greatly exaggerated.

For 22 years British medical journals have printed the pros and cons of whether aspirin, a frequent, regular medication in illnesses such as rheumatoid arthritis, could eventually cause the patient to develop a stomach or intestinal condition.

In an attempt to settle the controversy, Dr. F. D. Bargar and J. J. R. Duthie of Northern General Hospital, Edinburgh, Scotland, studied 244 rheumatoid arthritis patients, most of whom were taking regular doses of aspirin.

During a six-year period, the group showed a significant increase in hemoglobin level, which drops in cases of anemia, bleeding and ulcer. The amount of increase was about the same as for a smaller group not on regular aspirin, the researchers report in the *British Medical Journal*, April 9, 1960.

Only three patients (1.2%) developed evidence of peptic ulcer while on aspirin. This is about the same incidence of peptic ulcer as in the general population, indicating these few patients might have developed peptic ulcers whether they had taken aspirin or not.

Science News Letter, April 23, 1960



# ICE FIELDS

## BOTANY

### Twigs Reported Growing After Extreme Freezing

RUSSIAN SCIENTISTS have reported success in freezing birch and black currant twigs to minus 423 degrees Fahrenheit and making them grow afterwards.

Dr. I. I. Tumanov, a botanist and member of the Soviet Academy of Sciences, reports in the journal *Doklady—Botanical Sciences Section*, that twigs of the two common plants have been frost-hardened at temperatures only 36.7 degrees above absolute zero.

Dr. Tumanov and his colleagues placed freshly cut twigs wrapped in cellophane into a cold box at 23 degrees Fahrenheit, then gradually reduced the temperature to minus 76 degrees.

After this hardening process the twigs were immersed in liquid nitrogen, then in liquid hydrogen for two hours and then again in liquid nitrogen. The temperature of liquid hydrogen is 423 degrees below zero Fahrenheit. At absolute zero, minus 459.7 degrees Fahrenheit, all life is believed to cease.

When the twigs were later observed, they appeared normal and grew buds and new roots. Other twigs of similar stock, which had not been gradually hardened, died at minus 40 degrees. The black currant stock can generally survive natural temperatures down to about minus 22 degrees, Dr. Tumanov reports.

Washington scientists said that the application of this hardening method to cold of southern fruit trees, such as peach and the various citrus, so the crops will not be threatened, cannot be predicted without further information available from experimentation. Experiments similar to the Russian ones were undertaken in Japan in 1956.

Science News Letter, April 23, 1960

## VIROLOGY

### Studies Show Hardiness Of Foot-and-Mouth Virus

THE VIRUS that causes foot-and-mouth disease in cattle, swine and goats is a hardier bug than previously believed.

Recent studies have shown that the ribonucleic acid core of the virus, the part that produces the disease, may be more resistant to destruction by heat than scientists had thought, the U.S. Department of Agriculture reports.

Earlier experiments had indicated that the ability of foot-and-mouth virus to produce disease was destroyed by heating the virus to 140 degrees Fahrenheit or higher.

Now Dr. Howard L. Bachrach, biochemist of USDA's Agricultural Research Service, has found that such heat treatment only seals the infectious core within the protein covering of the virus and blocks

its ability to infect susceptible animal cells. The sealed-in cores were found to be infectious once the protein covering was chemically removed.

Thus, Dr. Bachrach concludes, the foot-and-mouth virus may be more dangerous than previously considered because nature may have ways of matching his chemical method of releasing the locked-in infectious core of the heat-treated virus.

Other studies have shown that meat from animals infected with foot-and-mouth disease is not rendered free of the virus by the usual procedure of ripening (which inactivates virus in muscle tissue), boning, salting and storage. The virus may survive in residual blood or lymph nodes of boned, salt-cured meat for at least 50 days, and in the bone marrow in refrigerated carcasses for at least 73 days.

Science News Letter, April 23, 1960

## PHYSICS

### Discovery of Element 103 Expected in Near Future

SCIENTISTS hope to be able to create element 103 before the end of April.

Dr. Albert Ghiorso of the Lawrence Radiation Laboratory, Berkeley, Calif., reported that discovery of the new element was only "a question of time." The University of California scientists who have discovered many of the transuranium elements of the atomic age believe they will succeed shortly in making another one, which will then be the heaviest known.

He said the California team had been trying to make element 103 for the past few months, and hope to announce its discovery at a meeting in Gatlinburg, Tenn., the first week in May. The method consists in bombarding a target element in such atom smashers as the Berkeley HILAC.

Science News Letter, April 23, 1960

## FOOD TECHNOLOGY

### Meat Flavor Isolated; May Make Algae Edible

TWO U.S. Department of Agriculture scientists have isolated and freeze-dried substances that give beef and pork their flavor and aroma.

The substances could add flavor to the unappetizing algae that may be grown in interplanetary manned space ships as food for astronauts.

The research was done by Irwin Hornstein and Patrick F. Crowe who work in the Department's Eastern Utilization Research and Development Division at Beltsville, Md.

They used cold water to extract the flavor substances and then freeze-dried the extract into a powder. When heated, the powder produced the rich aroma of roast meat.

The studies showed the main meaty flavor of meats is in their lean parts. But the crucial flavor elements that give pork and beef their distinctiveness are found in the fatty portions.

Science News Letter, April 23, 1960

## PSYCHOLOGY

### Alligators and Crocodiles Respond to Dinner Call

ALLIGATORS and crocodiles will learn to come when called at mealtimes, but snakes will not. The first two reptiles can hear, but the snake cannot, a psychologist reported.

Dr. Thomas E. McGill of Williams College, Williamstown, Mass., reports in the *Psychological Bulletin*, 57:165, 1960, that alligators roared, turned toward the sound or snapped when they heard a certain tone. By opening their eyes at the sound of a whistle, lizards indicated that they could hear.

Among the amphibians, head raising, snapping and restless movements indicated that salamanders responded to sounds from tuning forks and organ pipes. Sounds of whistles and bells increased the respiration of frogs.

The hearing of turtles and tortoises has been claimed but is doubted, and snakes are apparently deaf. Dr. McGill refers to J. S. Huxley's statement on the evolution of snakes: "... evidence makes it reasonably certain that the ancestors of the group had to pass through a stage of existence underground as deaf, half-blind and legless burrowing lizards." After re-emerging, the snake has, according to Huxley, reacquired much of its sight but not its hearing.

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## CHEMISTRY

### Gold-Plated Bricks Around the Corner

GOLD-PLATED metals, plastics, and glazed bricks and tiles may soon become a common sight in all walks of life. Gold-plated lead bricks have, of course, been available through the "confidence industry" for many years.

Hanovia Liquid Gold Division, Engelhard Industries, Inc., East Newark, N. J., has developed four new gold-bearing organic compounds which decompose at lower temperatures than those previously available. These are gold tertiary butyl, tertiary dodecyl, tertiary octyl, and tertiary hexadecyl mercaptides, and are already industrially available in various formulations.

The solution is applied to the prepared surface and the object is then heated in an oven, or under infrared lamps, to decompose the organic matter. The required temperatures range from about 450 degrees Fahrenheit in the case of plastics, to as high as 1,500 degrees for some enamels on stainless steel. There remains on cooling a thin film of gold, perhaps only a millionth of an inch in thickness. The cost of the process giving a film of this thickness is about 10¢ a square foot.

Not only will this process be used for decorative purposes, but, due to the excellent heat-reflecting properties of gold, it will also be used in protecting some metal components of missiles and high speed jet planes.

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## ASTRONOMY

# Springtime Constellations Shine

Arcturus, Spica and Regulus shine brightly in May skies while Deneb and Antares are dim due to low altitude. Jupiter and Saturn are both in Sagittarius.

By JAMES STOKLEY

HIGH IN THE SOUTH on May evenings can be seen a group of constellations that are just as characteristic of this season of the year as Orion and his neighbors are of winter.

These constellations are shown on the accompanying maps, which depict the heavens as they look about 11:00 p.m., your own kind of standard time (add one hour for daylight saving time), at the first of May, an hour earlier in the middle and two hours earlier at the end.

Leo, the lion, shines high in the southwest. This group may easily be identified by the six stars that form the "sickle," with first-magnitude Regulus in the handle of this implement. The blade of the sickle forms the lion's head, according to ancient fancies, while second magnitude Denebola, toward the left, is in his tail.

Farther left, and lower, is Virgo, the virgin, in which Spica shines. And directly above the eastern end of this constellation Bootes, the bear-driver, with brilliant Arcturus, can be seen.

This group extends to the other map that shows the northern half of the evening skies. To the left of this part of Bootes is the bear that he is supposed to be driving. This is the constellation of Ursa Major, the great bear, in which is the well-known "big dipper." At the western end of this group are the "pointers," whose direction, downwards, brings you to Polaris, the polestar. This is in Ursa Minor, the little bear, and it marks the end of the handle of the little dipper.

## Jupiter and Saturn Rise Late

Toward the northeast is Lyra, the lyre, with Vega, another star of the first magnitude. Below it is Cygnus, the swan, with Deneb. This star is actually of the first magnitude but its low altitude makes it look fainter.

Although Orion is gone (except in the early evening) some of his neighbors are still on view in the west. Below the western end of Ursa Major is Gemini, the twins, with Castor and Pollux. To the right of this figure stands Auriga, the charioteer, with Capella, while Procyon in Canis Minor (the little dog) is to the left, in the southwest.

In the southeast, just above the horizon, Scorpius, the scorpion, is coming into view. Here we find Antares; like Deneb, it is greatly dimmed by reason of its low altitude. During summer evenings, however, it shines brilliantly in the south.

As in recent months, no naked-eye planet is visible at the times for which our maps are drawn. However, Jupiter comes up before midnight at the first of May. It is in Sagittarius, the archer, which will then be in the southeast, about where Scorpius is shown. Jupiter's astronomical magnitude is minus 2.1, so it is many times more brilliant than any other planet, or any star, that can now be seen.

Saturn, which is also in Sagittarius, comes up about an hour later. It is about as bright as a typical star of the first magnitude, and is a twelfth as bright as Jupiter. Mars, still fainter and now in the constellation of Pisces, the fishes, rises about two hours ahead of the sun. Venus comes up about half an hour ahead of the sun, so late that it is very difficult to find. Mercury is not visible; it passes behind the sun on May 17.

Although Leo, Scorpius, Orion, and most of the constellations mentioned in these articles are visible in the evening at certain times of year and not others, this is not true of the big and little dippers. They are always in the sky, although not in the same place.

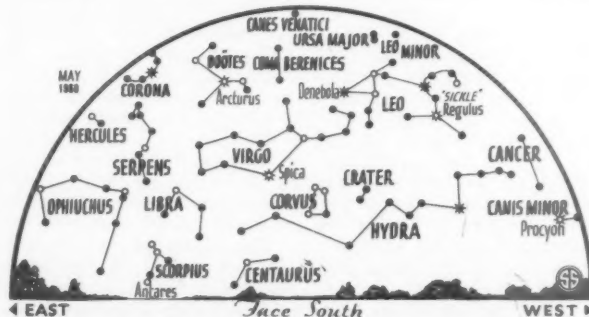
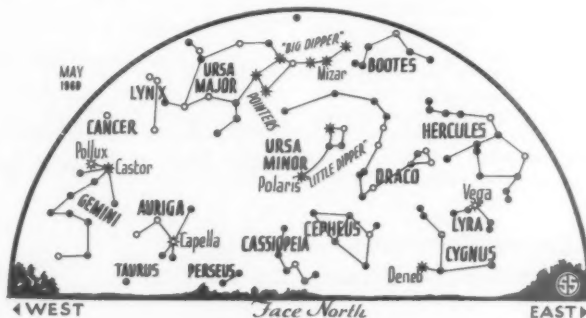
The big dipper is now at its best evening position of the year, high in the north. Six months from now it will still be

visible, just above the northern horizon, about where the W-shaped figure of Cassiopeia now stands. By that time Cassiopeia, which represents a queen seated on a chair, will be where the dipper is now.

All the constellations circle around a point near Polaris, which is called the north celestial pole. This appears to be directly over the North Pole of the earth. That is, at the North Pole, Polaris would be at the zenith, or 90 degrees above the horizon. However, at the earth's equator, Polaris would be on the northern horizon, at zero degrees altitude. Thus, as a person travels northward from the equator, the celestial pole climbs higher, its height always equal to your latitude. In the United States its altitude is about 40 degrees. Since Polaris is so close to the pole, its height is roughly equal to the latitude.

## Circumpolar Stars

Polaris goes around the pole in a small circle, while those stars that form the bowl of the little dipper go in larger circles. The circles made by the big dipper, and Cassiopeia, are still larger. But they are less than 40 degrees from the pole so, at 40 degrees latitude, they cannot go down far enough to go below the horizon. Thus, there is a circular area of the sky in the north, with its center at the pole and its edge at the northern horizon, containing the "circumpolar" constellations, which



\* \* \* \* SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

never set. This circle gets larger as you go to the north, and at the North Pole no constellation ever sets. At the equator, on the other hand, they all rise and set.

As for the great dipper itself, this is probably the best known of all star groups, but everyone does not call it a dipper. To the English, it is Charles's Wain (wagon), the name referring to Charlemagne. The bowl of the dipper is the wagon, and the handle the horses pulling it. Another common name in England is the plough. Because it consists of seven stars, Latin writers called it Septentriones (septem being the Latin for seven). And because of the direction of this group, septentrional became a synonym for north.

On the face of a dollar bill, where the words "Washington, D.C." appear, is the seal of the U.S. Treasury. Around it is the inscription "Thesaur Amer Septent Sigil," an abbreviated form of the Latin words meaning "Seal of the Treasury of North America." So, on this very familiar piece of currency, there is a reference to the seven stars that form the great dipper.

### Celestial Time Table for May

May	EST	
3	8:01 p.m.	Moon in first quarter
5	9:00 p.m.	Mercury passes Venus (neither easily visible)
11	12:43 a.m.	Full moon
12	1:00 p.m.	Moon nearest, distance 224,000 miles
13	8:00 p.m.	Moon passes Jupiter
14	10:00 p.m.	Moon passes Saturn
17	10:00 a.m.	Mercury behind sun
	2:55 p.m.	Moon in last quarter
20	5:00 p.m.	Moon passes Mars
25	7:27 a.m.	New moon
27	11:00 p.m.	Moon farthest, distance 252,400 miles

Subtract one hour for CST, two hours for MST, and three for PST.

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## Do You Know

The states which did not have an increase in population during 1959 were Arkansas and West Virginia, which showed decreases, and Vermont, which was stable.

The male whooping crane stands five feet tall and has a wing spread of seven feet.

Winged ants, often mistaken for termites, have "pinched in" waistlines, while the termite has a thick waistline.

## Questions

ASTRONOMY—How far away is the Andromeda galaxy? p. 263.

BOTANY—What liquids were used for freezing twigs to minus 423 degrees? p. 265.

CHEMISTRY—How was the sugar heptose first isolated? p. 262.

Photographs: Cover, NASA-Weather Bureau; p. 259, Hughes Aircraft Company; p. 261, Bell Aircraft Corporation; p. 263, Mt. Wilson-Palomar Observatories; p. 270, Ruder & Finn.

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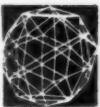
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**ATOMS, MOLECULES, AND CHEMICAL CHANGE**—Ernest Gruenwald and Russell H. Johnson—*Prentice-Hall*, 252 p., illus., \$6. Introductory text for non-science majors, emphasizes structure of matter and the chemical consequences of that structure.

**BASEBALL: The Early Years**—Harold Seymour—*Oxford Univ. Press*, 373 p., illus., \$7.50. A thorough study of the beginnings and development of the national sport.

**BASIC CONCEPTS OF ELEMENTARY MATHEMATICS**—William L. Schaaf—*Wiley*, 386 p., illus., \$5.50. Supplies the mathematical background needed by elementary school teachers of arithmetic, by showing *why* mathematical operations work.

**A BEGINNER'S GUIDE TO THE SKIES**—R. Newton Mayall and Margaret W. Mayall—*Putnam*, 184 p., illus., \$2.50. Intended to help the interested novice to become better acquainted with the night sky.

**BEST BOOKS FOR CHILDREN: Including Adult Books for Young People**—Mary C. Turner, Ed.—*Bowker*, 2nd ed., 207 p., paper, \$2. Section on science and nature books for beginning readers, and science books for young people, listed by categories.

**A BIOGRAPHICAL CHECKLIST AND INDEX TO THE PUBLISHED WRITINGS OF ALBERT EINSTEIN**—Nell Boni, Monique Russ and Dan H. Laurence—*Pageant Bks (N. J.)*, 84 p., illus., \$6. Chronological listing in three parts: Scientific

writings, general writings, and selected interviews.

**A COPYRIGHT GUIDE**—Harriet F. Pipel and Morton David Goldberg—*Bowker* with Copyright Soc. of the U.S.A., 40 p., paper, \$2. General background information on U.S. statutory copyright, in question and answer form.

**DOCTOR IN BOLIVIA**—H. Eric Mautner—*Chilton Co.*, 331 p., \$5.95. Austrian refugee doctor's experiences in bringing modern medicine to the people in the Bolivian jungle.

**THE DYMATION WORLD OF BUCKMINSTER FULLER**—Robert W. Marks—*Reinhold*, 232 p., illus., \$12. Complete presentation of Mr. Fuller's ideas, geodesic structures, and other technological innovations, copiously illustrated with drawings and photographs.

**THE EDDYSTONE LIGHT**—Fred Majdalany—*Houghton*, 215 p., illus., \$4. Story of the famous lighthouse in the English Channel.

**THE EDGE OF OBJECTIVITY: An Essay in the History of Scientific Ideas**—Charles Coulston Gillespie—*Princeton Univ. Press*, 562 p., \$7.50. Review of the personalities who have carried forward the objective description of nature.

**THE FORESEEABLE FUTURE**—Sir George Thomson—*Viking*, 166 p., paper, 95¢. Predictions of advances in technology we may expect in the next hundred years. Reprint of 1955 edition.

**FROM ATOMOS TO ATOM: The History of the Concept Atom**—Andrew G. Van Melsen—

*Harper*, 240 p., paper, \$1.45. The evolution of the atomic theory from Greek philosophical origins to particle physics, a work that first appeared in Dutch in 1949.

**MOLLUSCAN FAUNAS OF THE FLAGSTAFF FORMATION OF CENTRAL UTAH**—Aurele La Rocque—*Geological Soc. of Am.*, Memoir 78, 100 p., illus., \$4.50. Examines the paleoecology of the Flagstaff lake from late Paleocene to its extinction in Eocene time.

**THE MOON: Earth's Natural Satellite**—Franklyn M. Branley—*Crowell*, 114 p., illus., by H. K. Wimmer, \$3.50. Discusses the moon's motions, pull, temperature, atmosphere, and man's instruments for measuring these. For young people.

**NARVIK**—Captain Donald Macintyre—*Norton*, 224 p., photographs, maps, \$3.95. Detailed account of World War II Norwegian campaign which was first to employ sea, land and air arms in cooperation.

**NEWS AROUND THE CLOCK: Press Associations in Action**—Phil Ault—*Dodd*, 179 p., illus., by Frank Nicholas, \$2.75. The story of the business of gathering and transmitting the news, for young people.

**NORTH AMERICAN GAME FISHING GUIDE**—Joe Godfrey, Ed.—*Hammond*, 30 x 22 map, illus., \$1.95. Depicts principal locations of fresh and salt water fish and fishing places.

**101 WAYS TO USE YOUR HAM TEST EQUIPMENT**—Robert G. Middleton—*Sams*, 168 p., illus., paper, \$2.50. About grid-dip meters, VOM tests, oscilloscope and bridge tests.

**ORDER, GOODNESS, GLORY: The Riddell Memorial Lectures 1959**—W. A. Whitehouse—*Oxford Univ. Press*, 83 p., \$1.55. On Christian interest in natural science, and the interpretation of scientific reports about the world.

**THE ORIGINS OF MODERN SCIENCE, 1300-1800**—H. Butterfield—*Macmillan*, 242 p., paper, \$1.25. Reprint of history of science first published in 1949.

**PETROLEUM ENGINEERING: Drilling and Well Completions**—Carl Gatlin—*Prentice-Hall*, 341 p., illus., \$13. Examines basic elements and techniques of drilling, testing, formation evaluation and completion.

**THE PLASMA PROTEINS, Vol. I: Isolation, Characterization, and Function**—Frank W. Putnam, Ed.—*Academic*, 420 p., illus., \$12.50. Authoritative, interpretive, and integrative account of the plasma proteins as a physicochemical system.

**POULTRY PRODUCTION**—Clarence E. Bundy and Ronald V. Diggins—*Prentice-Hall*, 370 p., illus., \$6.35. Complete guide to latest developments in producing poultry, turkeys, ducks and geese.

**PROCEEDINGS OF 1959 SYMPOSIUM ON LOW-TEMPERATURE NUCLEAR PROCESS HEAT—AEC (OTS)**, 73 p., illus., paper, 75¢.

**QUANTITATIVE INORGANIC ANALYSIS**—R. Belcher and A. J. Nutton—*Butterworths (Canada)*, 2nd rev. ed., 390 p., illus., \$7. Laboratory manual for students and practising chemists.

**RELATION OF ORE DEPOSITION TO DOMING IN THE NORTH AMERICAN CORDILLERA**—Edward Wisser—*Geological Soc. of Am.*, Memoir 77, 117 p., illus., maps, \$4.

**RELEASE FROM SEXUAL TENSIONS: Toward an Understanding of Their Causes and Effects in Marriage**—Mary Steichen Calderone and Phyllis and Robert P. Goldman, foreword by Robert W. Laidlaw—*Random House*, 238 p., \$4.95. Physician advises married couples to help them achieve happiness in their marriage.

**RIEMANN SURFACES**—Lars V. Ahlfors and Leo Sario—*Princeton Univ. Press*, 382 p., \$10. Introduction to the theory, with emphasis on properties of open surfaces.

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THE SCIENTIFIC PAPERS OF SIR GEOFFREY INGRAM TAYLOR, Vol. II: Meteorology, Oceanography and Turbulent Flow—G. K. Batchelor, Ed.—*Cambridge Univ. Press*, 515 p., illus., \$14.50. Of particular interest to meteorologists, oceanographers, geophysicists and other scientists concerned with fluid mechanics.

SECTOR-FOCUSED CYCLOTRONS: Conference Proceedings, 1959—F. T. Howard, Ed.—*Nat. Acad. of Sciences-Nat. Res. Council*, 291 p., illus., paper, \$2.50. Papers covering design, construction and testing of a new type of fixed-frequency cyclotron.

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THE STARS—W. Kruse and W. Dieckvoss—*Univ. of Mich. Press*, 202 p., illus., paper, \$1.95. Reprint of short astronomy exclusive of the solar system, for general reader.

THE THEORY OF OPTICS—Paul Drude, transl. from German by C. Riborg Mann and Robert A. Millikan—*Dover*, 546 p., paper, \$2.45. Unabridged reprint.

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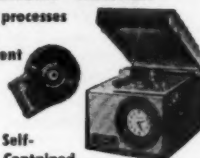
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Science News Letter, April 23, 1960

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Science News Letter, April 23, 1960

**TOY BABY BATH SET** includes eight-inch doll, bath, bassinet and covered diaper pail, all molded of plastic, for realistic play baths with soap and water. The doll drinks, wets, opens and closes its eyes.

Science News Letter, April 23, 1960

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Science News Letter, April 23, 1960



## Nature Ramblings



By HORACE LOFTIN

### Fellow Travelers



THE ULTIMATE in peace and good will has been pictured as the lion lying down with the lamb. Possibly such a scene never has been, nor ever will be, observed in nature. But suppose we substitute a hungry coyote for the lion and a tender calf for the lamb. Such a combination seems equally improbable, but it has been seen!

Three biologists on a field trip in one of our western ranges came upon a small herd of cattle browsing in rather tall grass. From time to time they noted an odd-looking object appear above the grass near the outer portion of the herd. As the cattle moved toward the men, the object took on a dog-like form. Then it became obvious that this was a big coyote—perhaps 35 to 40 pounds of predatory animal—walking calmly along with the cattle. There were many calves in the herd, several quite near the coyote, but neither they nor their parents seemed concerned about their company.

The scientists noted that the coyote kept near the edge of the herd. He was seen craning his neck time after time, as if looking for something just beyond the cattle.

Indeed, this was just what he was doing. He was accompanying the cattle for the mice, rabbits and other small creatures that were disturbed and revealed by the movements of the herd. The movement of the cattle was furnishing the coyote with ample, tender fare gathered with minimum effort on his part.

If coyotes can feel gratitude, certainly

this well-fed beast showed it to his bovine companions. He left them unmolested, and they in turn showed no fear of him.

This action of the coyote reminds one of a similar habit of the cattle egret. This beautiful heron spends his days at the feet of cattle, waiting for them to kick up succulent grasshoppers or other juicy insects which he pounces on. Once strictly an Old World species, the cattle egret has mysteriously gained a foothold in North and South America within about the last 20 years. How it crossed the Atlantic, no one knows. But it is now a permanent and plentiful resident of the Florida cattle country and is seen northward at least to New Jersey.

The unusual thing about coyote-cattle cooperation is the fact that a predatory beast, the coyote, is using a potential meal, the cattle, as a means of getting other food. Animal cooperation is far from uncommon, though generally the animal that follows another is not a potential enemy of its companion.

Science News Letter, April 23, 1960



## Fairs Will Break Records

(Continued from p. 263)

fair projects is increasingly high and the National Science Fair finalists represent larger numbers of students.

For example, Baltimore, Md., reports that its science fair was the culmination of some 20,000 projects made by students and exhibited at local fairs in the area.

About half of Kansas City's total of 30,000 projects were group projects with an average of eight students working in each group. Following 58 run-off science fairs with 4,654 exhibits, 1,963 were entered in the largest Greater Kansas City Science Fair ever held. National and local organizations made 32 special awards at the fair and nine organizations are providing summer jobs for promising high school students.

Visitors attending an Ohio science fair were served "Za-Za flies" as an unusual appetizer. These culinary tidbits are African stonefly larvae marinated in oil and served on crackers. Courageous guests who accepted such challenging hospitality earned a bright orange badge as an indication of true scientific spirit.

The fair offering this unique opportunity was the Tenth Quadri-County Science Fair, Archbold, Ohio, which has established a tradition of exotic hors d'oeuvres to go along with the main course of science projects. In past years the treats have included baby octopus meat, French fried baby bees, toasted ants and other dainties.

"Science Fair Week" in Maryland was set for April 5-11 by proclamation of Governor J. Millard Tawes, who urged "all citizens to do everything possible to further stimulate and create young scientists in our secondary age group."

The Governor's proclamation honored the students for the months they have devoted to working on individual science projects in their special fields of interest. It also cited the agreement of scientists and educators on the great stimulus offered by science fairs "to those students from whom must come the great scientists of tomorrow."

## Projects

The level of the projects carried out by teen-aged student-scientists still in their sophomore, junior, and senior years of high school, is extraordinary. It covers studies of smog, regression of tumors, a new silicon compound, telemetry systems, computers, bacterial mutations, the relation between human reflexes and gravity, anti-bacterial vapors, the juvenile hormones in Lepidoptera and calf thymus, and many other important subjects.

Although finalists will be coming to Indianapolis from such distant points as Japan, Germany, Canada and Puerto Rico, the boy and girl representing the new science fair at Bangkok, Thailand, will be traveling the greatest distance.

Puerto Rico now will be represented by five fairs. New Mexico has added four new fairs while Missouri has three new ones. The new affiliated science fairs include:

ALABAMA: Jacksonville — Northeastern Alabama Regional Science Fair. COLO-

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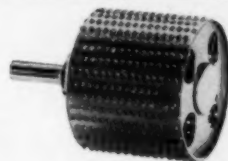
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MISSOURI: Rolla—South Central Missouri Science Fair; Springfield—Southwest Missouri Regional Science Fair; Warrensburg—Central Missouri Science Fair. NEW MEXICO: Albuquerque—Northwest New Mexico Regional Science Fair; Las Vegas—Northeast New Mexico Regional Science Fair; Roswell—Southeast New Mexico Regional Science Fair; University Park—Southwest New Mexico Regional Science Fair. NEW YORK: Poughkeepsie—Regional Science Fair of Dutchess County. NORTH CAROLINA: Charlotte—South Piedmont Science Fair. NORTH DAKOTA: Williston—Northwest North Dakota District Science Fair. PENNSYLVANIA: Emporium—Allegany Mountain Science Fair; Lancaster—Lancaster City-County Science Fair. PUERTO RICO: Hato Rey—Arecibo Regional Science Fair; Ponce—Ponce Regional Science Fair; Rio Piedras—Rio Piedras Regional Science Fair; San German—Western Puerto Rico Regional Science Fair; Santurce—San Juan Regional Science Fair. TENNESSEE: Jackson—West Tennessee Regional Science Fair. TEXAS: Houston—Greater Houston Science Fair, Texas District I West; Longview—Greater East Texas Regional Science Fair, Texas District VIII. THAILAND: Bangkok—Thailand Science Fair. UTAH: Salt Lake City—Utah Science Fair. VIRGINIA: Harrisonburg—Shenandoah Valley Regional Science Fair. WASHINGTON: Seattle—King County Science Fair. WEST VIRGINIA: West Liberty—West Liberty State College Regional Science Fair. WYOMING: Casper—Wyoming State Science Fair.

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